

In geographical areas subject to hurricanes, earthquakes, or other severe conditions affecting dwelling structures, the HUD Field Office shall require additional safeguards in proposed designs, when necessary.

3. Minimum Property Standards (MPS):

Compliance with HUD MPS will be determined by the HUD Field Office on the same basis as submissions involving conventional construction, except for the special features described in this Bulletin.

4. Inspection:

Field compliance inspections covering conventional items of construction and any special features covered in this Bulletin shall be made in accordance with prescribed procedures.

The appropriate HUD Field Office shall furnish a copy of a HUD field inspection report to Headquarters, Manufactured Housing and Standards Division, Office of Consumer and Regulatory Affairs, when there is:

- a. Evidence of noncompliance with portions of the system of construction described in this Bulletin.
- b. Faulty shop fabrication, including significant surface defects.
- c. Damage to shop fabricated items or materials due to improper transportation, storage, handling, or assembly.
- d. Unsatisfactory field workmanship or performance of the product or system.
- e. Any significant degradation or deterioration of the product or evidence of lack of durability or performance.

Periodic plant inspections will be made by HUD Field Office or State Agency personnel in accordance with their prescribed procedures. Factory inspection reports shall be submitted to HUD Headquarters, upon request.

5. Certification:

The manufacturer named in this Bulletin shall furnish the builder with a written certification stating that the product has been manufactured in compliance with the HUD Minimum Property Standards (MPS), except as modified by this Bulletin. The builder shall endorse the certification with a statement that the product has been erected in compliance with HUD MPS, except as modified by this Bulletin, and that the manufacturer's certification does not relieve the builder, in any way, of the responsibility under the terms of the Builder's Warranty required by the National Housing Act, or under any provisions applicable to any other housing program. This certification shall be furnished to the HUD Field Office upon completion of the property.

OUTLINE DESCRIPTION, CATEGORY II CONSTRUCTION:

GENERAL:

Shop fabricated foam core sandwich roof, exterior wall, and floor panels for one- and two-story dwellings are furnished in this method of construction. Panels consist of waferboard or plywood skins and polystyrene foam cores. Panels are transported to the building site where they are assembled with conventional construction.

Conventional construction may include various types of interior and exterior finish materials. All materials and methods of installation shall be in accordance with HUD Minimum Property Standards (MPS), Use of Materials Bulletin (UM), and Materials Releases (MR), except as may be specially noted herein. Plumbing, heating and electrical systems are field installed.

This Bulletin is based on a structural review of Korwall Industries, Inc. (The Manufacturer), panels for one- and two-story dwellings. Foundation design and nonstructural items (such as architectural, plumbing, heating and electrical features) are not covered by this Bulletin.

SPECIFICATIONS:

Form HUD-92005, "Description of Materials" specifying only the structurally related items (Nos. 1 to 12, 14, 26 and 27), as originally submitted for technical suitability determination, describes the materials that shall be used in construction of housing units under this system of construction. Form HUD-92005, furnished with each application for use under HUD housing programs, shall include as a minimum the same structural materials.

DRAWINGS:

The following drawings by Korwall Industries, Inc. shall be considered an integral part of this Bulletin:

<u>Drawing No.</u>	<u>Date</u>	<u>Description</u>
8822	3/01/85	Panel Details
Figure 1	2/22/84	Panel Details
Page 2	1/07/86	Through Sections
S2	1/07/87	Framing Details

The Builder shall submit construction drawings to the HUD Field Office with each application under HUD housing programs, which shall include the same or similar structural features as shown on the drawings listed above. Copies of these listed drawings shall also be furnished to the HUD Field Office by the Builder upon request.

DESIGN AND CONSTRUCTION REQUIREMENTS:

Design Loads (Allowable Superimposed Loads): The method of construction described in this Bulletin is based on the following allowable Superimposed Load Tables:

<u>Uniform Load</u>	<u>Span</u>	<u>Deflection/Span Ratio</u> (short-term load test)
<u>3 1/2" Wall Panels:</u>		
3,190 Lbs/LF Compression (axial) load	--	--
27.5 Lbs/SF Transverse (lateral) load	8'	L/480
<u>5 1/2" Roof Panels:</u>		
58.0 Lbs/SF	10'	L/286
39.0 Lbs/SF	12'	L/240
24.5 Lbs/SF	14'	L/240
<u>7 1/2" Roof Panels:</u>		
75.0 (1) Lbs/SF	10'	L/360
65.0 (1) Lbs/SF	12'	L/300
51.0 (1) Lbs/SF	14'	L/240
34.0 (1) Lbs/SF	16'	L/240
24.0 (1) Lbs/SF	18'	L/240
<u>7 1/2" Floor Panels:</u>		
54.0 Lbs/SF	12'	L/360

11 1/4" Roof Panels:

90.0 (1) Lbs/SF	10'	L/750
75.0 (1) Lbs/SF	12'	L/626
56.5 (1) Lbs/SF	14'	L/530
43.5 (1) Lbs/SF	16'	L/457
34.0 (1) Lbs/SF	18'	L/410
27.5 (1) Lbs/SF	20'	L/370

11 1/4" Floor Panels:

56.5 (1) Lbs/SF	14'	L/525
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- (1) Design load limitations: Foam core roof and floor panels under significant long-term sustained loads may be subject to creep-deflection or creep-rupture. Panel Loads noted (1) are less than short term load test. These allowable design loads should be increased only when they are verified by appropriate creep-deflection and creep-rupture tests and engineering analysis.

Framing of Loadbearing Walls: Wood-to-wood connections shall be provided between bearing walls and roof/ceiling or floor construction. Floor covering, including carpeting and vinyl tile, shall not be continued under loadbearing walls.

Roof Construction: Trussed rafters shall be designed and constructed in accordance with ANSI/TPI 1-1995 Standard (American National Standards Institute and Truss Plate Institute). "Design Specification for Metal Plate Connected Wood Construction."

FIRE PROTECTION:

The polystyrene foam core shall have a flame spread rating of not more than 75, and a smoke development rating of not more than 450 when tested in accordance with ASTM E 84. All interior ceiling and wall surfaces are covered with 1/2" thick gypsum wallboard or equivalent material with a 15 minute finish (fire) rating. Floor finish shall be a minimum of 5/8" (5/16" + 5/16") blandex or plywood.

MANUFACTURING PLANT:

Housing units covered under this Bulletin will be produced in the following plant:

Korwall Industries, Inc.
326 N. Bowen Road
Arlington, TX 76012
(817) 277-6741

The Ft. Worth HUD Office will inspect this plant in accordance with prescribed procedures.

QUALITY CONTROL:

The HUD Field Office, in whose jurisdiction the manufacturing plant is located, shall review and approve plant fabrication procedures and quality control program, and shall report to HUD Headquarters in accordance with outstanding instructions. The quality control program shall include field erection or supervision by Korwall Industries, Inc.

RECORD OF PROPERTIES:

The manufacturer shall provide a list of the first ten properties in which the component or system described in this Bulletin is used. The list shall include the complete address, or description of location, and approximate date of installation or erection. Failure of the manufacturer to provide HUD with the above information may result in cancellation of this Bulletin.

NOTICE OF CHANGES:

The manufacturer shall inform HUD in advance of changes in production facilities, transportation, field erection procedures, design, or of materials used in this product. Further, the manufacturer must inform HUD of any revision to corporate structure, change of address or change in name or affiliation of the prime manufacturer. Failure of the manufacturer to notify HUD of any of the above changes may result in cancellation of this Bulletin.

EVALUATION:

This SEB shall be valid for a period of one year from the date of initial issuance or most recent renewal or revision, whichever is later. The holder of this SEB shall apply for a renewal or revision 90 days prior to the Review Date printed on this SEB. Submittals for renewal or revision shall be sent to HUD Headquarters. Appropriate User Fee shall be sent to:

U.S. Department of Housing and Urban Development
Technical Suitability of Products Fees
P.O. Box 954199
St. Louis, MO 63195-4199

The holder of this SEB may apply for revision at any time prior to the Review Date. Minor revisions may be in the form of a supplement.

If the Department determines that a proposed renewal or supplement constitutes a revision, the appropriate User Fee for a revision will need to be submitted in accordance with Code of Federal Regulations 24 CFR 200.934, "User Fee System for the Technical Suitability of Products Program", and current User Fee Schedule.

CANCELLATION:

Failure to apply for a renewal or revision shall constitute a basis for cancellation of the SEB. HUD will notify the manufacturer that the SEB may be canceled when:

1. conditions under which the document was issued have changed so as to affect production of, or to compromise the integrity of the accepted material, product, or system,
2. the manufacturer has changed its organizational form without notifying HUD, or
3. the manufacturer has not complied with responsibilities it assumed as a condition of HUD's acceptance.

However, before cancellation, HUD will give the manufacturer a written notice of the specific reasons for cancellation, and the opportunity to present views on why the SEB should not be canceled. No refund of fees will be made on a canceled document.

This Structural Engineering Bulletin is issued solely for the captioned firm, and is not transferable to any person or successor entity.
